UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,396	12/03/2005	Walter Mehnert	8263	2870

67886 7590 11/06/2008

WOODLING, KROST AND RUST
9213 CHILLICOTHE ROAD
KIRTLAND, OH 44094

EXAMINER	
WHITTINGTON, KENNETH	

ART UNIT	PAPER NUMBER
2862	

MAIL DATE	DELIVERY MODE
11/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,396	MEHNERT ET AL.	
	Examiner	Art Unit	
	KENNETH J. WHITTINGTON	2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed September 23, 2008 has been entered and considered. In view thereof, the objections to the specification and drawings are withdrawn.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claims 32 and 33 are objected to because of the following informalities: each claim appears to re-introduce the at least one magnet, the ferromagnetic element, the induction element and the sensor element which were initially introduced in claim 31. Thus, two sets of these components are required in each of these claims. Simply amending these claims to accord antecedent basis to claim 31 using "the" or "said" for these features would overcome this objection. Appropriate correction is required.

Claim 34 is objected to because "the induction coils" and "the Hall sensor" lack antecedent basis. Appropriate correction is required.

Claim 42 is objected to because "the induction coils" lacks antecedent basis. Appropriate correction is required.

Claim 44 is objected to because "the coils" lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 31-33, 35 and 39-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Steinich et al. (US6084400), hereinafter Steinich.

Regarding claim 31, Steinich discloses a detector for detecting movements, comprising:

at least one moveable exciter magnet (EM) (See FIG. 1, note magnets 10-12);

only one associated ferromagnetic element (FE) having Weiss regions and Bloch walls (See FIG. 1, note any one of sensor 6, 7 and 8 and see col. 3, lines 39-53, note also that pulse wire sensors have the Bloch wall and Weiss regions. Not also claim 35 herein);

at least one induction element (SP, SP 1) associated with the ferromagnetic element (FE) (See FIG. 1, note one of sensor 6, 7 and 8 and see col. 3, lines 39-53 noted above); and,

at least one sensor element (SE, SP2 / HS) for detecting the polarity and the position of the exciter magnet (EM) representing the direction of movement of said exciter magnet (EM) at the time (Ts) that the magnetization of the ferromagnetic element (FE) is triggered and remagnetized by said exciter magnet (EM) (See FIG. 1,

note any other of sensors 6, 7 and 8, different from the one in the prior paragraphs and see col. 3, lines 14-34).

Regarding claim 32, Steinich discloses the detector adapted for detecting rotational movement, comprising:

at least one rotatable exciter magnet (EM) (See FIG. 1, note magnets 10-12);

only one associated ferromagnetic element (FE) having Weiss regions and Bloch walls associated with the ferromagnetic element (FE) (See FIG. 1, note any one of sensor 6, 7 and 8 and see col. 3, lines 39-53, note also that pulse wire sensors have the Bloch wall and Weiss regions. Note also claim 35); and,

at least one induction element (SP, SP1) (See FIG. 1, note one of sensor 6, 7 and 8 and see col. 3, lines 39-53 noted above); and

at least one sensor element (SE, SP2 /HS) for detecting the polarity and the position of the rotatable exciter magnet (EM) representing the direction of rotational movement of said exciter magnet (EM) at the time (Ts,) that the magnetization of the ferromagnetic element (FE) is triggered and remagnetized by said exciter magnet (EM) (See FIG. 1, note any other of sensors 6, 7 and 8, different from the one in the prior paragraphs and see col. 3, lines 14-34).

Regarding claim 33, Steinich discloses

a counter (36) (See FIG. 9, item 22);

at least one rotatable exciter magnet (EM) (See FIG. 1, note magnets 10-12);

only one associated ferromagnetic element (EM) including Weiss regions and Bloch walls (See FIG. 1, note any one of sensor 6, 7 and 8 and see col. 3, lines 39-53,

note also that pulse wire sensors have the Bloch wall and Weiss region. Note also claim 35); and,

at least one induction element (SP, SP1) (See FIG. 1, note one of sensor 6, 7 and 8 and see col. 3, lines 39-53 noted above); and

at least one sensor element (SE, SP2/HS) associated with said ferromagnetic element (FE) for detecting the polarity and the position of the exciter magnet (EM) representing the direction of the rotational movement of said exciter magnet (EM) at the time (Ts), that the magnetization of the ferromagnetic element (FE) is triggered and remagnetized by said exciter magnet (EM) (See FIG. 1, note any other of sensors 6, 7 and 8, different from the one in the prior paragraphs and see col. 3, lines 14-34),

whereby the counter (36) is part of an associated evaluation circuit comprising a nonvolatile memory unit (36) and a capacitor (C) (See FIG. 9, note memory 21 and capacitor 24).

Regarding claim 35, Steinich discloses the ferromagnetic element (FE) is a pulse wire (See FIG. 1, note sensor 6, 7 or 8 and disclosure related thereto).

Regarding claim 39, Steinich discloses the ferromagnetic element (FE) has an axis, which is mounted parallel to the direction of movement of the exciter magnet (EM) (See FIG. 1, note axis of sensors directed toward magnets rotating axis and when the magnets are rotated 90 degrees away from a respective sensor, the magnets are moving parallel to the axis of the sensor).

Regarding claim 40, Steinich discloses the ferromagnetic elements (FE) has an axis, which is mounted perpendicular to the direction of movement of the exciter magnet

(EM) (See FIG. 1, note axis of any one sensor and when the magnet passes the sensor, it is moving perpendicular to the axis of the sensor).

Regarding claim 41, Steinich discloses at least one ferromagnetic flux conducting piece (FL1 and/or FL2) for guiding and/or bundling the flux is assigned to the ferromagnetic element (FE) (See FIG. 1, note there are three sensors, if one sensor is the only one ferromagnetic element with the induction unit thereon, then the other two sensors having a pulse wire are interpretable as flux conducting pieces. Note also they are in the same sensors and are thus "assigned" to one another).

Regarding claim 42, Steinich discloses the energy supply for the evaluation circuit (30) is taken from the signals sent by the induction coils (SP, SP1, SP2) used to detect position and/or polarity (See col. 5, lines 19-54).

Claims 31, 36 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Zabler et al. (US4150314), hereinafter Zabler.

Regarding claim 31, Zabler discloses a detector for detecting movements, comprising:

at least one moveable exciter magnet (EM) (See FIGS. 1-5, note magnets on rotor 1);

only one associated ferromagnetic element (FE) having Weiss regions and Bloch walls (See FIGS. 1-5, note Wiegand wire item 5. Note that Wiegand wires are synonyms with pulse wires which have such walls and regions);

at least one induction element (SP, SP 1) associated with the ferromagnetic element (FE) (See FIGS. 1-5, note item 3, 33, 43 or 43); and,

at least one sensor element (SE, SP2 / HS) for detecting the polarity and the position of the exciter magnet (EM) representing the direction of movement of said exciter magnet (EM) at the time (Ts) that the magnetization of the ferromagnetic element (FE) is triggered and remagnetized by said exciter magnet (EM) (See FIGS. 1-5, note item 4, 34, 44 or 54 which detects the polarity of the exciter magnets as shown in FIG. 2).

Regarding claim 36, Zabler discloses the induction element (SP or SP 1) is a coil and used to measure the magnetization direction (See FIG. 2, note graph b) and, in conjunction with the sensor element (SE), to determine the direction in which the remagnetization of the ferromagnetic element (FE) is triggered (See FIG. 2, note the coil 3 in conjunction with sensor coil 4 are used to create graph c, which represents the pulses from the magnetization and re-magnetization of the ferromagnetic element. Note also that depending whether the pulses are above or below zero indicates the direction).

Regarding claim 37, Zabler discloses the sensor element (SE) is a second induction coil (SP2) wound over the ferromagnetic element (FE) and is used to determine the direction in which the remagnetization of the ferromagnetic element (FE) is triggered (See FIGS. 1-5, note item 4, 34, 44 or 54 and see FIG. 2, graph a).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 34, 38 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinich in view Romanik et al. (US7113063), hereinafter Romanik.

Regarding claim 34, Steinich teaches features of claim 33 above and further teaches the complete set of information available at the time (Ts) for determining the polarity and direction of movement of the exciter magnet (EM) comprises: data in the nonvolatile memory (36) and the signals at output terminals (22, 23) of the induction coils (SP1, SP2) or the signals at output terminals (22) of the induction coil (SP) and at output terminals (24) of the sensor (MS) (Steinich FIG. 9 and disclosure related thereto. Note the circuit including the memory 21 and the sensors 10-12 are used to determine polarity of the magnet and determine the direction of rotation thereof).

However, Steinich does not teach one of these other sensors being a Hall sensor. Romanik teaches using Hall sensors for measuring the rotation of a magnet (See Romanik FIGS. 1-4, magnets 140 or 340 and see sensors 165 and 170 or 365 and 370). It would have been obvious at the time the invention was made to use a Hall sensor in lieu of one of the Wiegand sensors in the apparatus of Steinich. One having ordinary skill in the art would do so because as noted in Romanik, Hall sensors, reed sensors and Wiegand (pulse wire) sensors are interchangeable for measuring a passing magnet (See Romanik col. 3, lines 14-28 and col. 6, lines 50-62).

Regarding claim 38, Steinich teaches the features above with regard to claim 31, but not one sensor being a Hall sensor. Romanik teaches using Hall sensors for measuring the rotation of a magnet (See Romanik FIGS. 1-4, magnets 140 or 340 and see sensors 165 and 170 or 365 and 370). It would have been obvious at the time the invention was made to use a Hall sensor in lieu of one of the Wiegand sensors in the apparatus of Steinich. One having ordinary skill in the art would do so because as noted in Romanik, Hall sensors, reed sensors and Wiegand (pulse wire) sensors are interchangeable for measuring a passing magnet (See Romanik col. 3, lines 14-28 and col. 6, lines 50-62).

Regarding claim 43, this combination teaches the nonvolatile memory unit (36) is a FRAM and/or an EEPROM unit (See Steinich col. 5, lines 64-65).

Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Steinich in view of Muller (DE3317502). Regarding this claim, Steinich teaches the features above with regard to claim 31, but not any current pulses supplied to the coils. Muller teaches supplying a series of current pulses in two direction through coils for a Wiegand, or pulse wire, sensor (See Muller FIGS. 3 and 6 and disclosure related thereto for circuit to provide current to Wiegand sensor). It would have been obvious at the time the invention was made to provide alternating pulses to bias the ferromagnetic element in the apparatus of Steinich as taught by Muller. One having ordinary skill in the art would do so to set the magnetization direction and level for the ferromagnetic element to allow operation of the sensor at desired level (See Muller Abstract).

Response to Arguments

Applicant's arguments with respect to the rejections over Mehnert et al. (US5714882) and Fowler et al. (US6265867) have been considered but are moot in view of the new ground(s) of rejection. The new grounds were required in view of the new claims provided in the Amendment.

The only arguments that may not be moot in view of the substantial amendments are those relating to Steinich and Romanik.

Regarding Steinich, the only argument asserted by Applicants is that Steinich does not disclose the claimed ferromagnetic element having Weiss regions and Bloch walls. However, a review of claims, particularly claim 35 indicates the ferromagnetic element of the claims, which has these Weiss regions and Bloch walls, is a pulse wire. The sensor element in each of the sensors for Steinich is a pulse wire (See all FIGS., note sensors 6, 7, 8 and disclosure related thereto). Furthermore, as is well known in the art, pulse wires and Wiegand sensors are interchangeable names for sensors that use a ferromagnetic element that has such Weiss regions and Bloch wall to operate. This is also discussed in Steinich at col. 3, lines 35-53, wherein it is stated the pulse wire has changes in magnetizations within its magnetic domains or Weiss regions. These regions are surrounded by the Bloch walls. Accordingly, Steinich discloses precisely the ferromagnetic element of the claimed invention.

Regarding Romanik, Applicants state Romanik does not provide a hint to detection of direction of rotation. However, Romanik is only being applied in the

rejection above to show that it is obvious to use reed switches, Hall sensors or Wiegand-type sensors interchangeably when measuring rotating magnets. The fact that Romanik does not teach detection of direction of rotation is not controlling.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENNETH J. WHITTINGTON whose telephone number is (571)272-2264. The examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Assouad can be reached on (571) 272-2210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kenneth J Whittington/
Primary Examiner, Art Unit 2862